tients. Patients receiving midazolam had higher mortality rates (31.7%) compared to patients on lorazepam (29.2%). However, these results were not confirmed when controlling for disease severity and other factors. Multivariate regression analysis revealed that type of sedative/analgesic drug treatment and whether the hospital had a care plan were not associated with shorter ICU and total hospital stays when controlling for patient demographics and disease severity. In fact, patients admitted to hospitals with care plans had longer total hospital stays. More severe patients had shorter total hospital stays, probably due to higher mortality. Higher mortality was associated with older patients and higher disease severity. **CONCLUSION:** There is much discussion about treatment guidelines and use of care plans to improve quality of care and reduce hospitalization costs. In this study, the type of sedation and analgesia treatment in mechanically ventilated ICU patients and whether the patient had a care plan did not influence days in ICU or mortality. Whether following treatment guidelines and care plans reduces total costs, needs further evaluation.

PHP18

A MODEL FOR COMPARING COSTS ASSOCIATED WITH PRESCRIPTION WASTAGE WITH APPLICATION TO VA PRESCRIPTION DATA

Walton SM, Johnson NE, Arondekar BV, Schumock GT
University of Illinois at Chicago, Chicago, IL, USA

OBJECTIVE: The objective of this study was to determine the frequency and cost of prescription switches for 90-day vs. 30-day outpatient prescriptions dispensed by a VA pharmacy and to develop a model to determine the prescription fill policy with the lowest total costs. **METHODS:** VA outpatient prescription records for one year for simvastatin and lovastatin (30 or 90-days) were analyzed to determine the frequency, quantity and cost of medication wasted due to medication switches. The quantity wasted was defined as the difference between the quantity dispensed and the quantity of drug used before changing to a new drug or dosage. Differences in dispensing costs for a given time-period were also included. Sensitivity analyses were conducted for quantity wasted, drug costs, and dispensing costs. **RESULTS:** A total of 16,990 prescriptions were analyzed. The quantity and costs of medication wasted were higher for 90-day prescriptions than for 30-day prescriptions. However, average costs to the VA pharmacy were $2.45 higher per prescription for the 30-day supply because of additional dispensing costs for the 30-day fill. The model and sensitivity analyses show that a 90-day supply policy results in lower total pharmacy costs under several scenarios. Only in the case of high drug costs was the 30-day policy favorable to the 90-day policy in terms of total costs. **CONCLUSION:** Prescriptions given in a 90-day supply resulted in lower total costs. The projected cost savings of having a 90-day versus a 30-day policy would hold true for prescriptions with similar drug costs and similar rates of wastage that result from changes that physicians make to patients' prescriptions. In addition, the model provides a flexible framework for pharmacy administrators to assess refill policies in terms of excess or unnecessary cost for different classes of drugs, given patient and/or physician behavior.

PHP19

USING FINANCIAL RATIOS TO COMPARE PHARMACY SPENDING IN THE DEPARTMENT OF VETERANS AFFAIRS

Sampson JM
VA Medical Center, Alexandria, LA, USA

OBJECTIVE: To understand how pharmacy spending varies across the VA Medical Centers in the United States. Pharmacy costs continue to rise. From 1990 to 1994 pharmacy expenditures were reported to be 6% of the total Veteran's Health Association (VHA) budget. In 1995 and 1996 it was 7%. In 1997 it was 8% and in 1998 it was 9%. Then in 1999 it went to 11%. Future projections are for a continued increase in budget spending. **METHODS:** Ratios of yearly Pharmacy to Medical Center expenditures were compared. These ratios were ranked and compared with geographical location. The years of 1997 and 1998 were studied. **RESULTS:** The majority of the highest ratios were located in the Midwest, Soutwest, and Southern regions of the United States. **CONCLUSIONS:** Financial ratios can demonstrate variations in expenditures and identify areas that may require further inquiry.

PHP20

THE LAG BETWEEN EFFECTIVENESS AND COST-EFFECTIVENESS EVIDENCE OF NEW DRUGS AND DECISION-MAKING IN HEALTH CARE

Stoykova BA, Drummond M, Kleijnen J
University of York, York, UK

BACKGROUND: A new drug is approved for use if its effectiveness has been demonstrated. Recently decision-makers in a number of countries have begun to account for both the effectiveness and cost-effectiveness of new drugs. However, cost-effectiveness evidence lags behind the effectiveness data. **OBJECTIVE:** To explore the timeliness of delivering cost-effectiveness information about new drugs with established effectiveness and significant financial impact. **METHODS:** New drugs were identified, based on guidance documents and reports published by the National Institute for Clinical Excellence of England and Wales, and the following data were collected: dates of publication of first effectiveness and cost-effectiveness evidence, methodology of the cost-effectiveness analysis, funding of the research, etc. **RESULTS:** Guidance documents for the following new drugs/drug groups have been published by NICE by the end of 2000: tax-

anes for ovarian and breast cancer, proton pump inhibitors in the treatment of dyspepsia, glycoprotein IIb/IIIa inhibitors, methylphenidate for hyperactivity in childhood, zanamivir, and rosiglitazone for type II Diabetes Mellitus. The analysis of the evidence shows that the effectiveness of these drugs has been demonstrated in the last 12 years. However, cost-effectiveness evidence has been published for 70% of the drugs with an average delay of 3 years (range 0–10). The cost-effectiveness of those, introduced after 1995 (80% of all included drugs/drug groups), has been demonstrated using models only, if at all. **CONCLUSIONS:** Cost-effectiveness evidence is produced with a lag behind the effectiveness evidence. As a result, decision-makers are in a position of awaiting sound evidence while issuing guidance based on current inconclusive research results. The cost to society is discussed, and establishing the cost-effectiveness of new drugs alongside RCTs at an earlier stage of their development is suggested.

PHP21

SINGLE EUROPEAN-LEVEL COST-EFFECTIVENESS ANALYSIS: OVER THE FOURTH HURDLE AND INTO THE DITCH?

Hutton J[1], Nuijten M[2], Chambers M[1]
[1]MEDTAP International Inc, London, UK, [2]MEDTAP International, Jisp, Netherlands

BACKGROUND: As more European governments require economic data to support reimbursement applications the potential burden of multiple economic evaluations is being seen as a problem by industry. Placing responsibility for cost-effectiveness assessment at the European level using standardised methods has been proposed as a solution. **OBJECTIVE:** To review the feasibility of a European level cost-effectiveness test for new drugs, from conceptual, practical and political viewpoints. **METHODS:** The issues are examined first from the theoretical perspective—does a European level economic evaluation have any inherent logic. Secondly, the practical issues of how such an evaluation might be conducted are examined. Could it be based on a phase III clinical trial? The political issues relate to who would regulate the production of such cost-effectiveness data; who would use the data to assist in what decision(s)? Different regulatory models are assessed using the analogy of drug licensing. DISCUSSION: The position generally taken by economists is that a generalised cost-effectiveness result is neither possible nor useful. Differences in the price structures, treatment patterns and provider incentives between systems make generalisations of cost-effectiveness of questionable relevance. How fast will European integration produce a single health market? Moves towards a single European price for each drug are relevant as in the willingness of European states to allow the EU to play a bigger role in health care financing and organisation. Will countries accept each others' assessments or will an EU agency like EMEA be required? **CONCLUSIONS:** Long-term political and economic changes may well create a true European market in which cost-effectiveness at the European level will have meaning and relevance. Meanwhile, individual country health care systems seem more concerned with short-term budget impact when making new drugs available. The pharmaceutical industry should not anticipate a reduction in the overall demand for locally targeted economic information.

PHP22

PATIENT ADHERENCE TO DRUG THERAPY IN A THREE-TIER COPAYMENT STRUCTURE

Hutchison S
AdvancePCS, Scottsdale, AZ, USA

BACKGROUND: The three-tier copayment plan is designed to reduce the cost of pharmacy benefits to the insurer or payer while maintaining patient choice. Because the patient pays a larger portion of the cost of middle- and high-tier drugs, some have argued that this plan design may adversely impact patient drug utilization for chronic medications. **OBJECTIVE:** To determine whether a three-tier copayment structure adversely affects patient drug utilization for middle- and upper-tier drugs for diabetes and depression. **METHODS:** We conducted a longitudinal, retrospective claims database study using claims data from a national pharmaceutical benefits management company. Claims for two chronic conditions, depression and oral diabetes, were examined for patients on three-tier copayment plans and for patients on an open formulary plan with the same copayment for every drug. Average rates of patient adherence, number of prescriptions filled, and days of therapy were calculated. **RESULTS:** There were statistically significant differences in rates of patient adherence, number of prescriptions filled, days of therapy, amount of copay, and payer costs among patients using drugs in the lower, middle, or upper tier of the three-tier structure. In addition, average patient adherence, number of prescriptions filled, and days of therapy did differ significantly for patients on an open formulary compared to patients on a three-tier copayment structure. These differences were largely a function of sample size, and may be of little practical utility.**CONCLUSIONS:** The larger patient copayment for medications in the middle and upper tiers of a three-tier copayment structure have only a minimal impact on drug utilization in the antidepressant and oral diabetes drug categories. Further research is needed to determine whether these findings would be replicated when applied to other therapeutic classes.

PHP23

DRUG REIMBURSEMENT PROGRAM FOR INDIGENT PATIENTS: AN ECONOMIC IMPACT ON THE HOSPTAL ADMINISTRATION BUDGET

Nguyen AB[1], Arbuckle R[2], Anderson RW[2], Sansgiry SS[1]
[1]University of Houston, Houston, TX, USA; [2]The University of Texas MD Anderson Cancer Center, Houston, TX, USA